

REMARKS/ARGUMENTS

Claims 1-28 are pending with Claims 17-26 being withdrawn from consideration by the Office. With respect to these withdrawn claims, Applicants request consideration of rejoinder upon finding that the elected claims are allowable (MPEP 821.04).

The amendment to Claim 1 is found in Figure 1 and the disclosure at page 4, lines 26-32.

No new matter is believed to have been added by these amendments.

As set forth in independent Claim 1, the invention is directed to 1. (Currently Amended) A device, comprising:

a cup composed of solid walls, a base of which is oriented in the direction of the force of gravity and which base is flat, solid and comprised of a silicon substrate suitable for depositing polycrystalline silicon thereon, and an opening region of which is oriented in the opposite direction to the force of gravity, and wherein said cup is heatable directly or indirectly by a heating, temperature-measuring control unit, wherein an external diameter of the walls of said cup is less than or equal to a diameter of said base;

a substance-adding unit having a substance feedline and a metering unit, the substance-adding unit being oriented with a substance outlet in the direction of the force of gravity and projecting into a free volume of said cup between said base and said opening region;

a reactor casing; and

an outlet for a gaseous product, wherein the reactor casing comprises a turbulence barrier to calm gases flowing from of the cup through the opening region and which turbulence barrier is positioned in the reactor casing so that the gases can pass to the outlet for gaseous product.

Applicants thank Examiner Lund for the courtesy of discussing the merits of the present application with their undersigned representative on February 6, 2007.

During this discussion, the rejections primarily in view of the Kordina patent (5,704,985) were addressed. Notably, unlike the previous rejections, the rejection sets forth that the differences between the claimed device and that described in Kordina are not supportive of patentability of the claims because the device being claimed is simply a reversed the orientation of the Kordina device. It was noted during this discussion that this basis of rejection was not founded because Kordina requires that the gas containing silicon carbide move upwards for deposition on the lower side of lid (12). In particular, Kordina, in column 5, lines 50-57 states quite clearly that the vertical arrangement of the susceptor walls, the upward flow of the hot gases is promoted so that the gases are better utilized for the growth. Therefore, modifying the Kordina apparatus to provide the substance adding unit oriented to the direction of force of gravity projecting into the free volume of cup as claimed would render the device in Kordina inoperable for its intended purposes as well as go directly against the required teachings of that patent.

In addition, it was discussed as to how the gaseous products flowed in the different reactors. The Examiner indicated that he would reconsider the rejections the claims were defined in this manner to differentiate the claims. This amendment is being submitted in this paper. These differences are quite apparent from the claims as written exemplified by a side-by-side depiction of the device from Kordina and that of the present application as shown in Figure 1:

Kordina

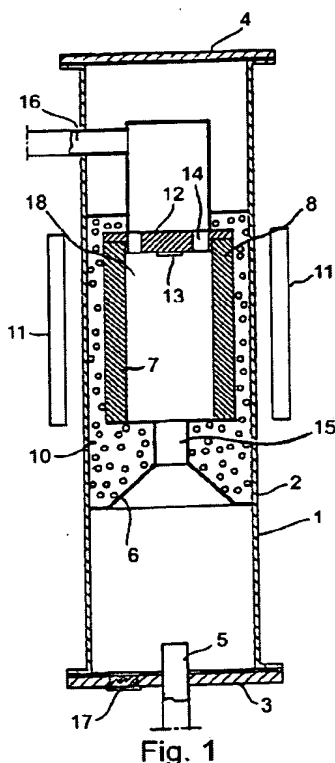


Fig. 1

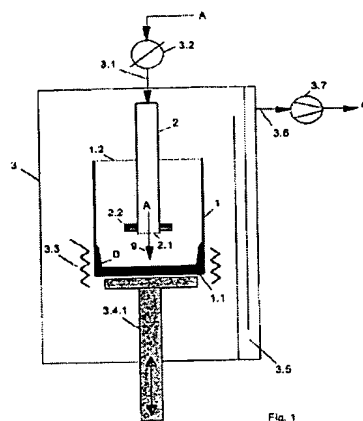


Fig. 1

present application

In the present application and amended claim 1 the gas flows through the turbulence barrier 3.5 for gas calming and particle deposition which is then connected to the outlet 3.6. In contrast, in Kordina's reaction, the gas enter through conduit 5 at the lower end flange 3, lower inlet 15 through gas outlet holes 14 in the lid 12 and then through conduit 16 connected to a pump. (see col. 5, lines 6-32). For these reasons and those discussed further below, Applicants request reconsideration and withdrawal of all of the rejections.

As discussed on page 3 of the present specification:

Surprisingly, it has been found that a solid (B) can be produced in lump form with a relatively low production of silicon dust in a simple and particularly economic way by controlled thermal decomposition of a gaseous substance (A) if the decomposition and deposition of the substance (A) is carried out in a specific device.

This specific device mentioned in this paragraph, is the one that is claimed.

Moreover, this device is particular advantageous for producing polycrystalline silicone (as the solid (B) in the paragraph above—see page 4, 1<sup>st</sup> paragraph of the specification) from silane gases, see also page 4, 2<sup>nd</sup> paragraph (reproduced below):

The present invention is particularly economical, since the outlay on equipment is relatively low, and when monosilane is used as substance (A) the only off-gas formed is hydrogen, possibly with small amounts of monosilane. In addition, a relatively low level of silicon dust is formed in the process. Due to the procedure and device according to the present invention, there is generally no caking of solid (B) on the reactor wall (3). Furthermore, practically the only off-gas obtained is free hydrogen. The deposition rate of solid (B) is generally >97%. Furthermore, the dust content in the off-gas (C) after outlet (3.6) is generally very low. Also, the present process is particularly advantageous in energy terms, since, inter alia, relatively low substance flow rates can be used.

The devices described in the cited references are arranged in a manner that is different from that claimed. Moreover, those devices because they are designed and optimized for specific purposes other than the preparation of polycrystalline silicon as described in this application would not have been modified to yield the claimed device. In particular, as noted above, the device of Kordina is oriented in a different direction than that being claimed AND the set up for gas flow and output is entirely different from that of Kordina.

As the secondary references relied upon in the rejections under 35 USC 103 using Kordina as the primary reference, do not describe or suggest modifying Kordina's disclosure in the manner that is claimed, Applicants also request that the rejections under 35 USC 103 be withdrawn.

The Goela patent is cited to reject Claim 5 as alleging teaching a gas conveying unit with a dust separator. The Padovani patent is cited to reject Claim 14 as alleging teaching a coating device with heating and cooling coils. However, Goela nor Padovani describe or

suggest modifying Kordina in a manner that one would obtain the presently claimed device. Moreover, one would not do such a thing because it would be completely contrary to the explicit teachings of the Kordina patent.

US 6,001,175 ("Maruyama") describes an apparatus for crystal growth of, e.g., silicon wafers used in semiconductors, that is configured like a sheet to accommodate the stated need for larger diameter wafers (see col. 3, lines 6-21). In addition, the Examiner relies on the statement in col. 21, lines 58-64 as alleged basis to conclude that SiC is equivalent to silicon and therefore would have been obvious to use only silicon based on this disclosure. The disclosure in Marayama states: "Although initial heating can be generally performed by heat conduction from a heating material when a high-purity carbon susceptor coated with silicon carbide (SiC) or a low resistivity silicon substrate susceptor is used as the substrate wafer support 9, defects such as crystal plane slipping caused by heat distortion, etc. occurs easily in the substrate wafer."

Applicants respectfully disagree with the Examiner's conclusion on this basis because there is simply no motivation to substitute any of the materials from the Kordina et al patent with silicon as described in this patent publication. This is particularly true in light of the fact that Kordina et al requires SiC and it is improper to go directly against the explicit teachings of the prior art when raising an obviousness rejection. Moreover, there is nothing in the references which specifically suggest using high purity silicon in the Kordina et al devices because they are designed and optimized for specific purposes other than the preparation of polycrystalline silicon as described in this application.

Moreover, the disclosure in Maruyama does not permit one to go against the explicit teachings of the Kordina patent to make a device as claimed and as such there can be no issue

Application No. 10/663,789  
Reply to Office Action of November 6, 2006

of obviousness in this case. This applies equally to the rejections noted for Claims 5, 8 and 14 using the Kordina, Maruyama, Goela and Padovani patents.

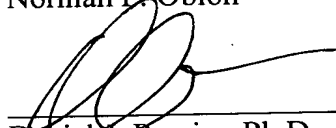
Withdrawal of all rejections under 35 USC 103(a) is requested.

A Notice of Allowance for all pending claims is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, he is encouraged to contact Applicants' undersigned representative.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman E. Oblon



Daniel J. Pereira, Ph.D.  
Registration No. 45,518

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 06/04)